

REMARKS

In the final Office action noted above, claims 1-30 were allowed, claims 38, 41-44 and 46-47 were finally rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,260,683, Tanaka et al., and dependent claims 39, 40 and 45 were considered to recite allowable subject matter. Claims 31-37 and 48-62 were previously cancelled. In the instant RCE response, rejected independent claims 38 and 41 were amended to render them more specific in particularly pointing the intended invention of the Applicants. Allowed dependent claim 39 was also amended to render the recitation thereof consistent with the amendments of its parent claim 38. Support for these amendments is found in the specification, particularly in paragraph 0033, and in Figure 1 of the drawings. The rejection of the amended and remaining claims 38, 41-44 and 46-47 is respectfully traversed. The following remarks will support Applicants' position regarding the rejected claims.

Tanaka et al. is directed to a tire pressure detecting apparatus for a vehicle, which apparatus includes three coils as shown in the diagram of Figure 20 thereof. An excitation coil 99 and a receiving coil 101 are provided in the body of the vehicle for obtaining magnetic coupling with a third coil 13 which is part of a resonant circuit C1 (see col. 9, lines 10-13) at the tire. Coil 99 excites coil 13 with a magnetic flux field into a resonant frequency which is imparted via a magnetic flux field to the receiving coil 101 and used to determine the pressure of the tire. The coupling among the three coils is transformer-like using core materials for enabling conduction of the magnetic flux.

Tanaka et al. use the terms "magnetic coupling" and "electromagnetic coupling" interchangeably in the text of their patent (refer to the Abstract; col. 9, lines 38-40 and col. 10, lines 10-12). However, it is clear from the description of Tanaka et al. that their design supports only magnetic coupling among the three coils. The magnetic flux field coupling is confirmed by Figure 19 which shows the excitation and receiving coils 99 and 101 wound around iron cores 103 and 105, respectively, and Figure 30 which refers to a frequency range of 15-19 kHz conducive to a magnetic flux coupling frequencies. No mention is made in Tanaka et al. of an E-field antenna and electric field coupling beyond the loose reference to "electromagnetic".

In contrast, amended independent claim 38 recites, in substance, that the resonant circuit responds to the induced current with an E-field signal at a resonant frequency commensurate with the capacitance of the variable capacitance sensor; a receiving circuit comprising an E-field antenna E-field coupleable to the resonant circuit and operative to receive the E-field signal at the resonant frequency, and a sensing circuit coupled to the E-field antenna for converting the received E-field signal into a signal representative of the E-field signal; and a processing circuit coupled to the receiving circuit for processing the converted E-field representative signal to generate a pressure reading of the tire.

In addition, amended independent claim 41 recites, in substance, the steps of: E-field coupling the resonant frequency from the resonant circuit to an E-field antenna; and generating a pressure reading from the E-field coupled resonant frequency of the E-field antenna.

This aspect of Applicants' invention recited in amended independent claims 38 and 41 is supported in Applicants' application in Figure 1 which shows an E-field antenna 32, E-field sensing circuit 34 and RF receiver and processing unit 20, and in paragraph 33 of the instant specification. Note that Applicants enable the use of the E-field signal by the operational RF coupling frequency range of 14-20 mHz and the E-field antenna 32. No such E-field antenna/sensing circuit or E-field coupling capability is taught by Tanaka et al., nor is there any suggestion of such an antenna or coupling which could motivate someone to realize such a design. Rather, the operational frequencies referred to in Tanaka et al. of 15-19 kHz and the iron cores of the coils used in the design of Tanaka et al. would lead anyone skilled in the pertinent art to an understanding that the design is one solely of transformer-like, magnetic flux coupling among the three coils. In Tanaka et al., it is solely the magnetic flux field coupled signal in coil 101 that is used by the detecting circuit 340 for determining tire pressure.


Accordingly, amended independent claims 38 and 41 both recite an inventive aspect as noted above that is patentably distinguishable from Tanaka et al. and thus, are clearly novel over and not obvious in view of Tanaka et al. As regards the rejection of claims 42-44, they all recite steps involving the E-field coupled resonant frequency which are not taught or suggested by Tanaka et al. In addition, all of the rejected dependent claims 42-44 and 46-47 are dependent from amended independent claim 41 and include all of the limitations thereof. Therefore, they

also are novel over and non-obviousness in view of Tanaka et al. for at least the same reasons given above for their amended parent claim 41.

In view of the above, it is respectfully requested that the obviousness rejections of claims 38, 41-44 and 46-47 be withdrawn. Applicants acknowledge that amended dependent claim 39, and originally filed dependent claims 40 and 45 are all considered allowable; however, they contend that all of the amended and remaining claims 38-47 are allowable. Claims 1-30 are allowed.

Since the application is considered in condition for allowance, an early issuance thereof is earnestly solicited. While Applicants believe that no additional fees are due the Office at this time, the Commissioner is hereby authorized to charge any additional related fees, or credit any overpayments, to Deposit Account No. 03-0172.

Respectfully submitted,


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